

(No Model.)

W. H. GOLDSMITH.

DRAWING ROLLS FOR MACHINES FOR WORKING FIBROUS MATERIALS.

No. 512,651.

Patented Jan. 9, 1894.

Fig. 1.

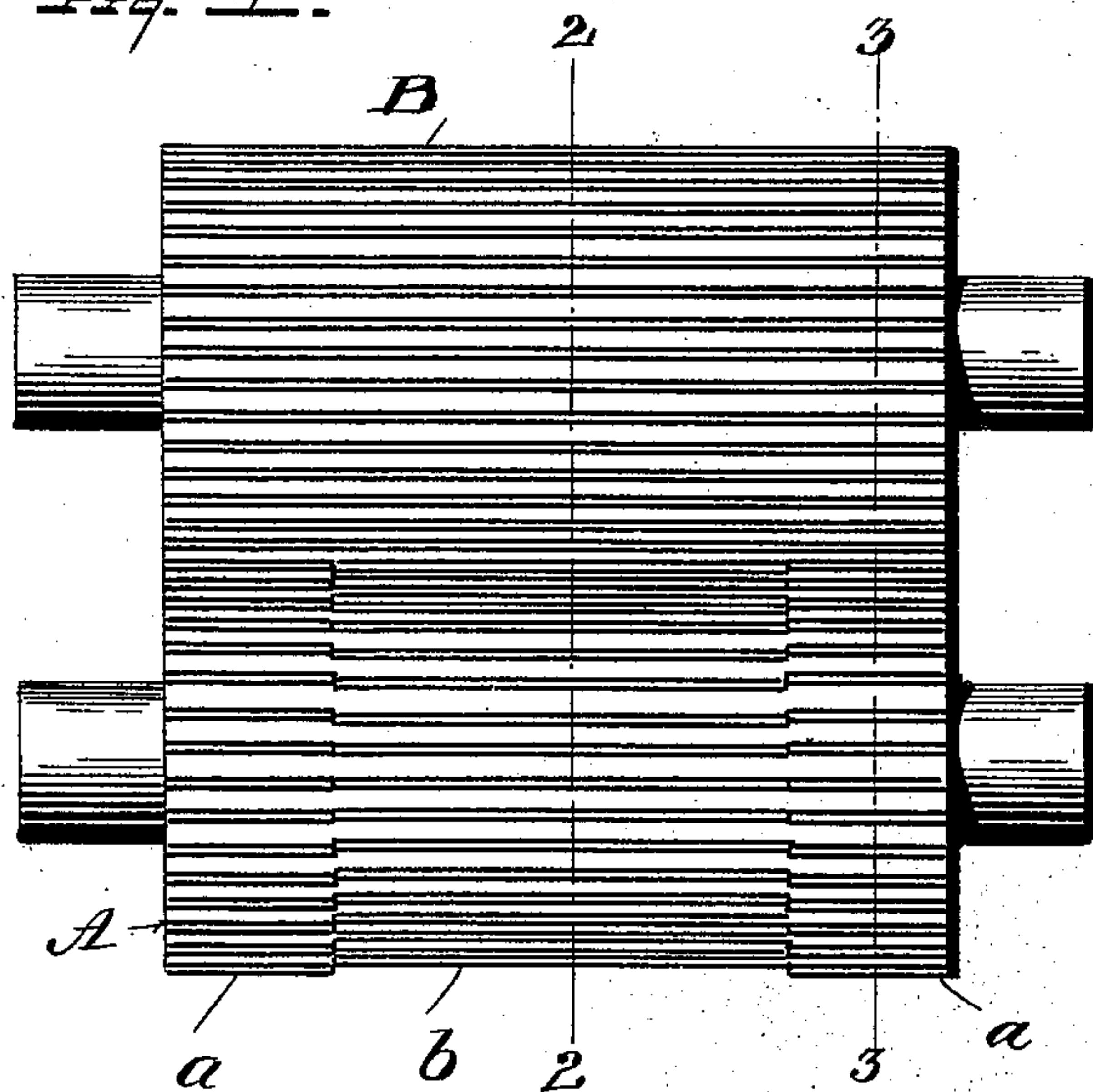


Fig. 2.

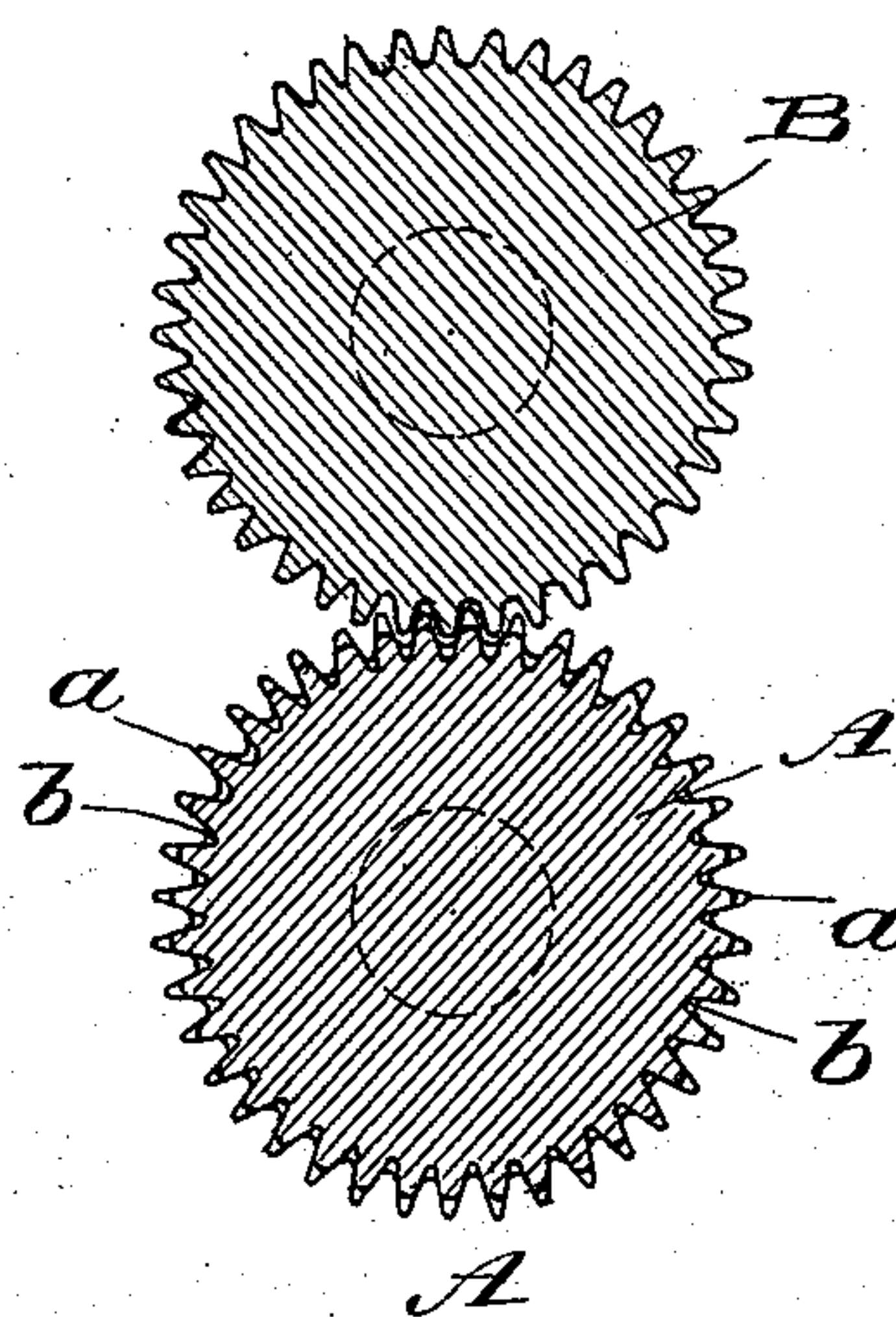


Fig. 3.

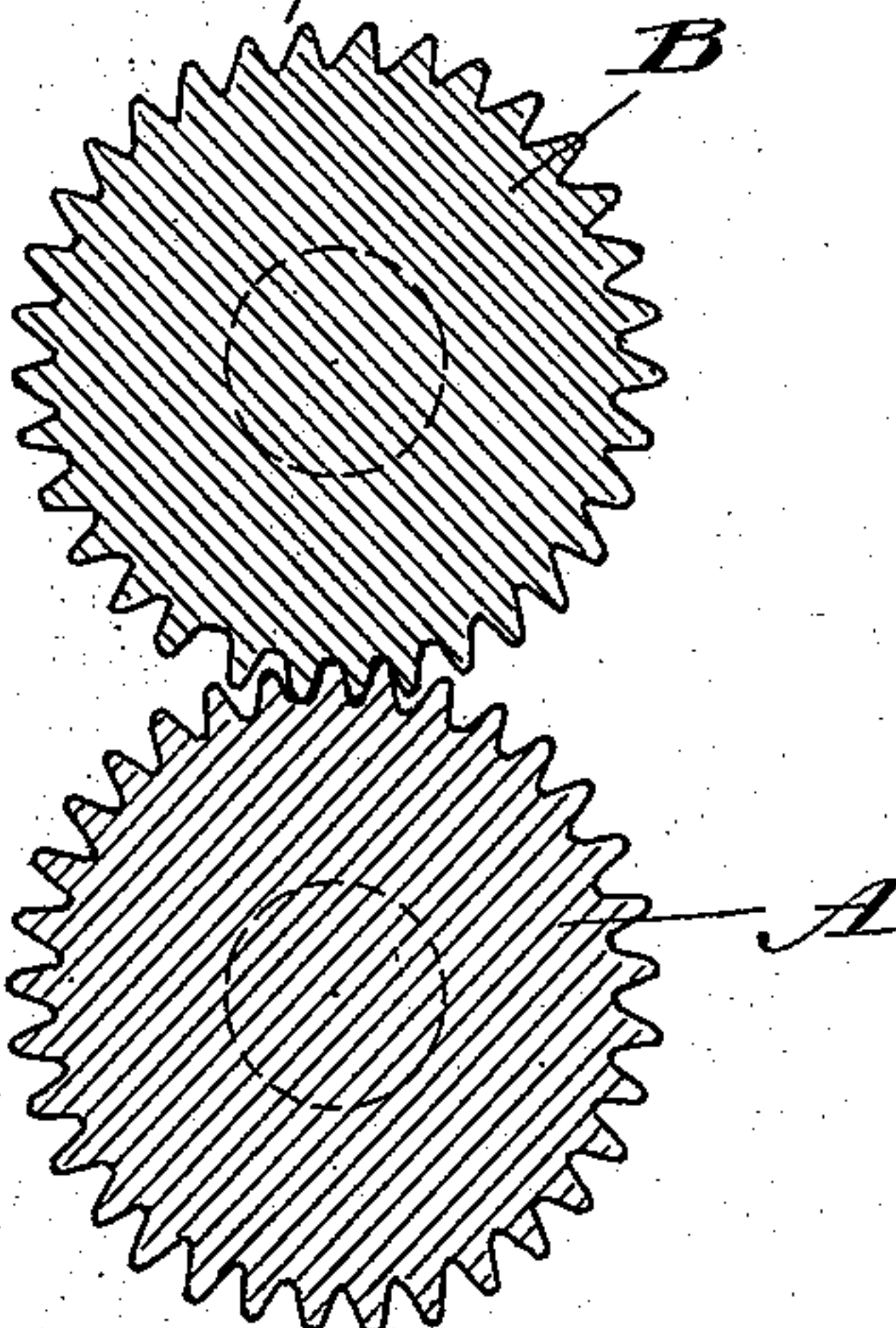


Fig. 4.

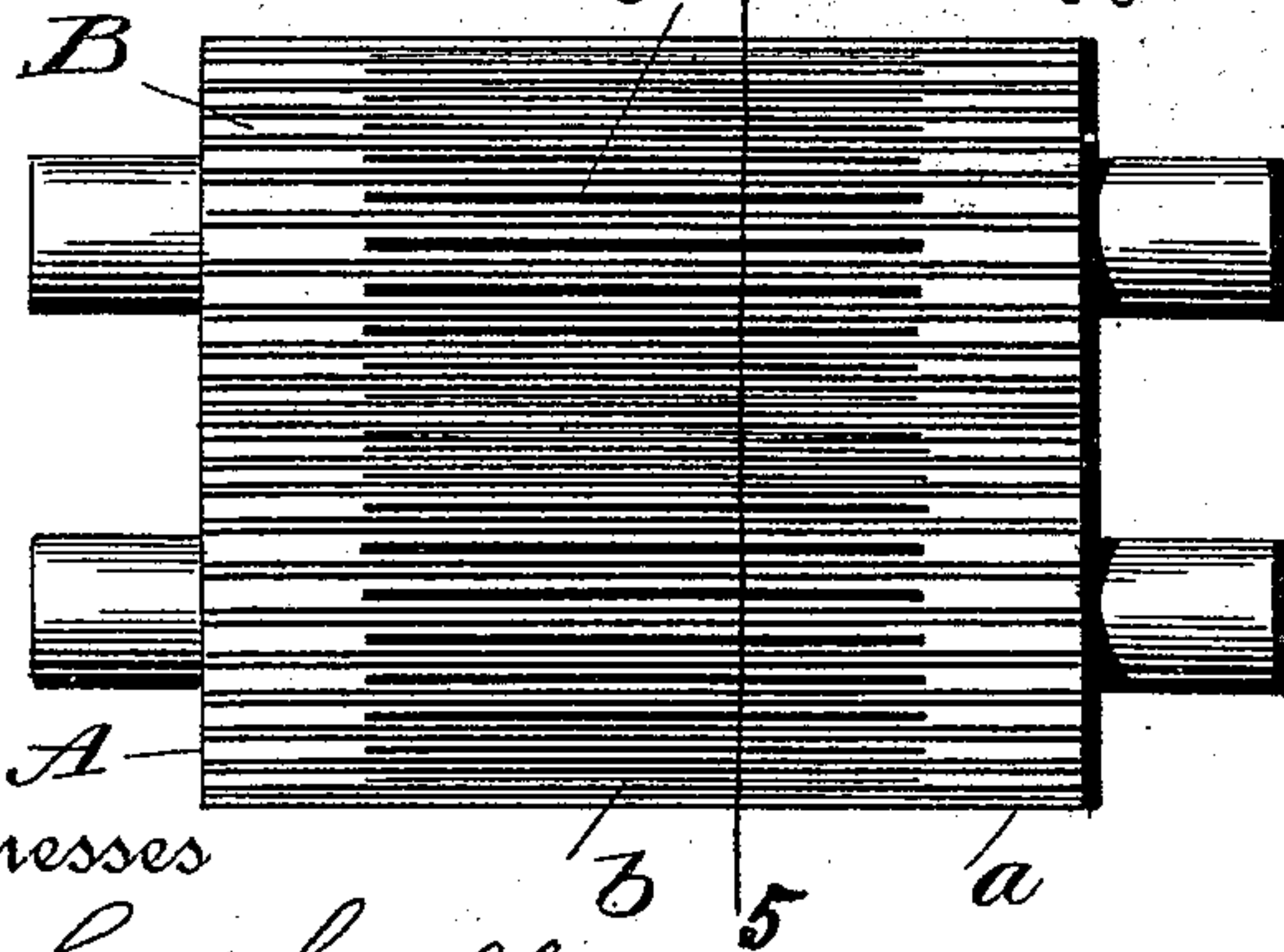
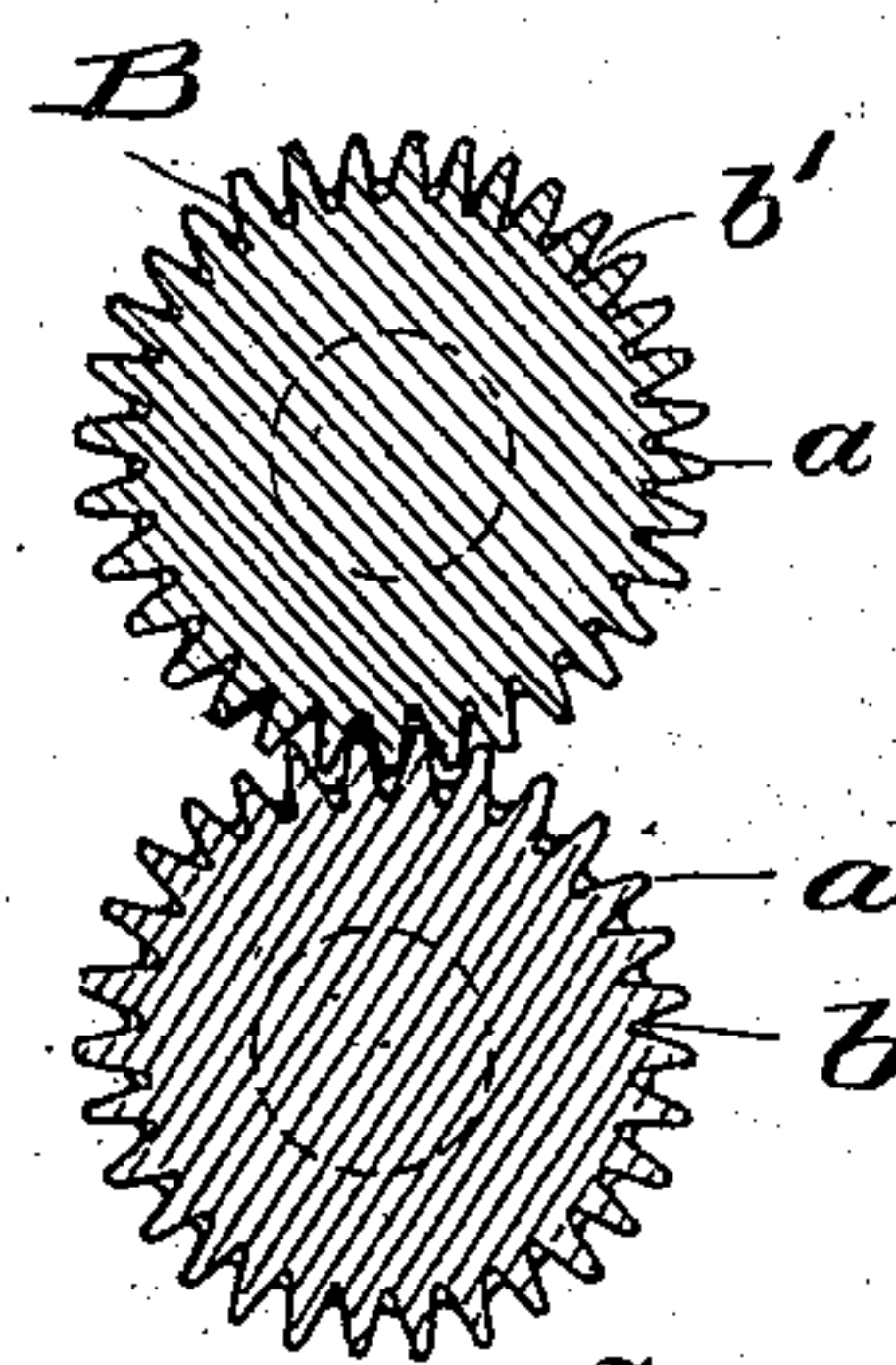


Fig. 5.



Witnesses

L. C. Mills.
E. A. Dier

Inventor
William H. Goldsmith
by Marshall Bailey
his Attorney

UNITED STATES PATENT OFFICE.

WILLIAM H. GOLDSMITH, OF BERKELEY, RHODE ISLAND.

DRAWING-ROLL FOR MACHINES FOR WORKING FIBROUS MATERIALS.

SPECIFICATION forming part of Letters Patent No. 512,651, dated January 9, 1894.

Application filed October 16, 1893. Serial No. 488,306. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. GOLDSMITH, of Berkeley, in the State of Rhode Island, have invented a new and useful Improvement in Drawing-Rolls for Machines for Working Fibrous Materials, of which the following is a specification.

This improvement in drawing rolls for spinning frames, railway heads and drawing frames, and other machinery for working fibrous materials is applicable to metallic longitudinally fluted or grooved drawing rolls used in pairs.

In ordinary "drawing heads" the bottom one of each pair of rolls is a grooved or fluted metallic roll, and the top one usually is a leather covered roll which furnishes a yielding surface to avoid injuring the sliver passing between the two. In some cases grooved or fluted metal rolls have been used for both top and bottom rolls and this with a view to avoid the added expense consequent upon the employment of a plain leather covered roll for the top roll. Where two fluted metal rolls are employed however, the fiber passing between them is apt to be injured by being tightly pressed into and against the bottom of the groove in one roll, by the rib on the other roll; and to obviate this objection it has been proposed, to provide means (such as collars mounted on the ends of one roll and arranged to bear against circular bearing surfaces formed at the ends of the other roll, these collars and bearing surfaces being on the ends of the rolls outside of and beyond the flutes or grooves) whereby the rolls are held and maintained separated to such an extent that the ribs on the one roll never enter the grooves of the other roll far enough to contact with the bottom of said grooves.

It is my object to provide what I believe to be a simple and more effective way against injuring or treating the fiber passing between fluted metal drawing rolls, dispensing with any form of arrangement which will necessitate the making of entirely new rolls, and furnishing a construction to which at very slight expense existing fluted metal drawing rolls can readily and expeditiously be adapted. To this end I so proportion the grooves and ribs of the pair of rolls throughout that portion of them which is in the path of the sliver, that

while the flutes at the two ends of the rolls mesh together in the usual way, and to the full extent, so as to induce at all times positive motion by the direct positive engagement of the one with the other, the central portion of the rolls, through which the sliver passes will have grooves and ribs of such size and so proportioned that the ribs of the one do not extend to the bottom of the grooves of the other, but are separated therefrom to such an extent as to perform their proper function without crushing or unduly compressing the fiber. This result I prefer to obtain by making the grooves of the lower roll, throughout that portion of their length which is in the path of the sliver, of greater depth than they are at the end portions of the roll to each side of the central portion; in conjunction with the deepening of the grooves I also reduce the size of the ribs throughout this central portion of the roll so that it will be of less diameter than the end portions.

In the drawings to which I will now refer in further explanation of my invention: Figure 1 is a front elevation of a pair of drawing rolls embodying my invention in its preferred form. Fig. 2 is a section on line 2—2, Fig. 1. Fig. 3 is a section on line 3—3, Fig. 1. Fig. 4 is a side elevation and Fig. 5 is a section on line 5—5, Fig. 4 of a modification.

In the construction shown in Figs. 1 to 3, the upper roll B is a metallic fluted drawing roll of ordinary or usual construction. The lower roll A is a metallic fluted roll, which so far as its end portions *a* are concerned is of any usual construction, the flutes on these end portions meshing directly and positively at all times with the flutes of the upper roll. In the central portion *b* of the roll A however, through which the sliver passes, the grooves are made deeper than they are in the end portions, as seen in Fig. 2, so that the ribs of the top roll will be separated some distance from the bottom of this deepened portion of the grooves, when the same ribs are against the bottom of the shallower end extensions of said grooves in the end portions *a* of the roll A. When the deepening of the grooves is confined to one roll, then the ribs on that roll must be correspondingly cut away so as to avoid bringing them in contact with the bottom of the grooves in the other roll. Conse-

quently in the construction illustrated in Figs. 1 to 3 the ribs of the lower roll are cut away so as to reduce the external diameter of that portion of the roll in which the grooves are deep-
5 ened.

In the construction shown in Figs. 4 and 5, the lower roll has its central portion formed with deepened grooves, but is not reduced in external diameter; consequently the grooves in the top roll B are correspondingly deepened,
10 as illustrated at *b'* in the figures last above referred to.

The main advantages of my invention are that it is applicable to existing fluted metal drawing rolls, all that is needed being to
15 deepen the grooves in one or both of the rolls throughout the central portion *b*; and that by this provision the continuous positive meshing together of the rolls is permitted, thus
20 causing the one to be positively driven at all times from the other, and avoiding uneven drawing of the cotton which may occur where the power to drive the top roll is communicated through the intermediary of the sliver;
25 as the top or driven roll becomes foul in its bearings, it is hard at times to drive, and consequently uneven drawing action will result unless the two rolls mesh directly together without any intermediary.

What I claim herein as new and of my own invention, and desire to secure by Letters Patent, is—

1. A pair of longitudinally fluted drawing rolls, which mesh together at their end portions *a*, and at their central portion *b*, have
35 their ribs and grooves so proportioned that when the ribs of the one roll meet the bottom of the grooves in the other roll in the end portions *a* the corresponding ribs and grooves throughout the central portion *b* will be separated from each other so that the ribs of the
40 one will not contact with the bottom of the grooves of the other throughout this portion thus affording a path for the sliver, substantially as set forth.

2. A pair of metal fluted drawing rolls in which one of the rolls throughout its central portion *b* has deepened grooves, and is externally of less diameter than the end portions
45 *a*, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my hand, before two subscribing witnesses, this 13th day of October, 1893.

WILLIAM H. GOLDSMITH.

Witnesses:

A. T. ATHERTON,
C. T. ATHERTON.